IN THE ABSTRACT

Please delete the original Abstract and insert the attached substitute Abstract.

IN THE SPECIFICATION

Please replace the paragraph beginning on page 7, line 1 with the following paragraph:

In order to achieve the aforesaid objective, this invention provides an image encoding and decoding method for synthesizing an interframe predicted image by global motion compensation or warping prediction wherein global motion vectors are found by applying a two-stage interpolation/extrapolation to motion vectors of plural representative points having a spatial interval with a characteristic feature. More specifically, this invention provides a method of synthesizing an interframe predicted image wherein, when the motion vector of a pixel is calculated by performing bilinear interpolation/extrapolation on motion vectors of four representative points of an image where the pixel sampling interval in both the horizontal and vertical directions is 1 and the horizontal and vertical coordinates of the sampling points are obtained by adding to integers (where

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w=wn/wd, wn is a non-negative integer, wd is the hw power of 2, hw is a non-negative integer and wn<wd), there are representative points at coordinates (i,j), (i+p, j), (i, j+q), (i+p, j+q) (where i, j, p, q are integers), the horizontal and vertical components of the motion vectors of representative points take the values of integral multiples of 1/k (where k is the hk power of 2, and hk is a non-negative integer), and when the motion vector of a pixel at the coordinates (x+w, y+w) is found, the horizontal and vertical components of the motion vector at the coordinates (x+w, j) are found by linear interpolation/extrapolation of motion vectors of representative points at coordinates (i, j), (i+p, j), as values which are respectively integral multiples of 1/z (where z is the hz power of 2, and hz is a non-negative integer), and after finding the horizontal and vertical components of the motion vector at the coordinates (x+w, j+q) by linear interpolation/extrapolation of motion vectors of representative points at coordinates (i, j+q), (i+p, j+q), as values which are respectively integral multiples of 1/z (where z is the hz power of 2, and hz is a non-negative integer), the horizontal and vertical components of the motion vector of the pixel at the coordinates (x+w, y+w) are found by linear interpolation/extrapolation of the aforesaid two motion vectors at the coordinates (x+w, j), (x+w, j+q) as values which are respectively integral multiples of 1/m (where m is the hm power of 2, and hm is a non-negative integer).

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Please replace the paragraph beginning on page 31, line 21 with the following paragraph:

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Fig. 6 shows the configuration of one embodiment of an image encoding device 600 according to this invention.

Please replace the paragraph beginning on page 37, line 5 with the following paragraph:

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Fig. 11 shows a typical construction of a predicted image synthesizer 1103 of a decoder which decodes the bit stream generated by an image encoding device using a motion compensation processor 616. Numbers which are the same as those of other diagrams denote the same components. The global motion compensation predicted image 903 is synthesized in the global motion compensation predicted image synthesizer 911 using global motion compensation parameters 904 extracted from the motion information 702 in the splitting unit 1102, relative to the decoded image 710 of the immediately preceding frame. The block matching predicted image 906 is synthesized in the block matching predicted image synthesizer 1101 using block matching motion vector information 907 extracted from the motion information 702 relative to the decoded image 710 of the immediately preceding frame. A

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selection switch 908 selects either of these schemes for each block, i.e., the predicted image 903 due to global motion compensation or the predicted image 906 due to block matching, based on the selection information 909 extracted from the motion information 702. After this selection process is applied to each block, the final predicted image 712 is synthesized.

Please replace the paragraph beginning on page 38, line 1 with the following paragraph:

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--Fig. 12 shows the structural configuration of the global motion compensation predicted image synthesizer 1201 according to this invention. It will be assumed that the motion vectors of the corners of the compensation image are transmitted as global motion parameters. The motion vectors of representative points are calculated by equations (9), (10) in a computing unit 1205 using information 1204 relating to motion vectors of the corners of the image. Using information 1206 relating to the motion vectors of these representative points, the motion vectors of provisional representative points are calculated for each line using equation (11) in a computing unit 1207. Then, by using information 1208 relating to the motion vectors of these provisional representative points, motion vectors for each pixel are calculated from equation (12) in a computing unit 1209. At the same time, using information 1210 relating

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to the motion vectors of each pixel and the decoded image 1202 of the immediately preceding frame, a global motion compensation predicted image 1203 is synthesized and output by a processing unit 1211.

Please replace the paragraph beginning on page 42, line 18 with the following paragraph:

Returning now to Fig. 13, immediately before the process in the step 1308 is started, when the current frame is an I frame, the input image is stored in the frame memory A, and when the current frame is a P frame, a differential image between the input image and predicted image is stored in the frame memory A. In the step 1309, DCT is applied to the image stored in this frame memory A, and the DCT coefficients calculated here are output to the output buffer after being quantized. Further, in a step 1310, inverse quantization and inverse DCT are applied to these quantized DCT coefficients, and the image obtained as a result is stored in the frame memory B. Next, in step 1311 it is again determined whether the current frame is an I frame, and when the image is not an I frame, the images in the frame memories B and C are added in a step 1312, and this result is stored in the frame memory B. Here, the encoding of one frame is finished, and the image stored in the frame memory B immediately before processing of a step 1313 is performed is a reconstructed image of the frame for which encoding has just been completed (same as that obtained on the decoding side). In the step

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